

Remarks

This is a response to the Office Action issued November 22, 2002 in the captioned Application. In the Action, the Examiner has withdrawn all previous grounds of rejection, except for the rejection to claims 1-3, 7-26 and 28-59 under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,530,112 to Greenshields *et al.* ("Greenshields") in view of U.S. Patent No. 5,200,338 to Crawford *et al.* ("Crawford"). Applicants respectfully traverse the rejection.

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)." *See* M.P.E.P. § 2142. Applicants respectfully submit that the rejection fails to establish a *prima facie* case of obviousness based on any combination of Greenshields and Crawford.

First of all, there is no motivation to combine Greenshields with Crawford. In this connection, Greenshields disclose the extraction of hemicelluloses, which, incidentally, can be gelled using exogenous hydrogen peroxide. In contrast, Crawford discloses a process for degrading lignocellulose by lignan peroxidase by adding glucose and glucose oxidase to produce hydrogen peroxide. The Office Action states that each process uses peroxidase and a substrate to generate a final product. *See* Office Action, page 4. However, while Applicants do not deny that both of the processes of Greenshields and Crawford use peroxidases, they are completely different processes, i.e., extraction of hemicelluloses and degrading lignocellulose. While the Examiner contends that the processes can be combined, the Examiner does not show why it is desirable to combine the references, which is required to establish a *prima facie* case of obviousness. ("The mere fact that references can be combined or modified does not render the

resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis applied). When the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper. *Ex parte Skinner*, 2 USPQ2d 1788 (Bd. Pat. App. & Inter. 1986)).

Indeed, absent any teaching in Crawford on polymerization by cross linking, the combination of Greenshields with Crawford is not warranted. However, Crawford is directed to depolymerization, and teaches away from Greenshields, which teaches polymerization. Even in view of this clear distinction between the references, the Examiner has picked and chosen selected teachings in the prior art and combined them based on Applicant's own disclosure, which is improper ("The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.") *See* M.P.E.P. § 2142.

Second, even assuming that the references could be combined, the combination of Greenshields and Crawford still fails to teach or suggest the instant invention. In this regard, the instant invention provides a composition which promotes oxidative gelation, comprising, *inter alia*, an oxidase substrate. The Office Action, admits that Greenshields fails to teach *in situ* production of a peroxide by addition of a oxidase substrate. Crawford is then added for the proposition of including an oxidase substrate for the generation of peroxide. However, Crawford teaches depolymerization, which is the antithesis of Applicant's invention, i.e., gelation. Crawford fails to teach or suggest modifying the disclosed process to include addition of an oxidase substrate to promote gelation. Crawford, therefore, actually teaches away from the instant invention ("A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) (emphasis applied)). Accordingly, an combination of Greenshields and Crawford fails to teach or suggest the instant invention.

Finally, both Greenshields and Crawford are silent as to the unexpected results of the instant invention. In this connection, a greater than expected result is an evidentiary factor pertinent to the legal conclusion of obviousness of the claims at issue. *In re Corkill*, 711 F.2d 1496, 226 USPQ 1005 (Fed. Cir. 1985). Presence of a property not possessed by the prior art is evidence of nonobviousness. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963). Applicants respectfully submit that the Declaration under 37 C.F.R. § 1.132 of Roderick Greenshields submitted September 13, 2002 demonstrates such unexpected results over Greenshields and Crawford.

Specifically, the Greenshields Declaration details how generation of hydrogen peroxide *in situ* would depolymerize hemicellulose material. This scenario is the one disclosed in Crawford with structurally similar lignin molecules. Accordingly, the polymerization and gelling characteristics of the present invention are completely unexpected in view of the teachings in Crawford. Even more surprising is that this reaction involves 20 times more glucose and 5000 times more glucose oxidase than the reaction in Crawford. Greenshields and Crawford are simply silent as to these unexpected results. *In re Oelrich*, 579 F.2d 86, 198 USPQ 210 (CCPA 1978) (factually based expert opinions on the level of ordinary skill in the art are sufficient to rebut the *prima facie* case of obviousness)).

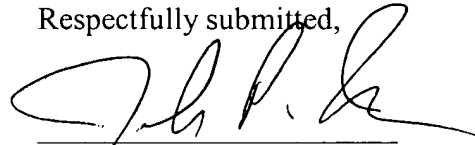
Based on the foregoing, the present invention is not rendered obvious by Greenshields and Crawford. Accordingly, reconsideration and withdrawal of the outstanding rejection under § 103(a) are respectfully requested.

Conclusion

Applicants submit that the claims are in condition for allowance, and respectfully request favorable consideration to that effect. The Examiner is invited to contact the undersigned at (202) 912-2000 should there be any questions.

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Date

Respectfully submitted,


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